

# The COVID-19 Vaccination Debate: Is there is a Link between COVID-19 and Celiac Disease?

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**Abstract** Celiac disease has been recognized as a multisystem immunological disorder commonly manifested in children and adults. Celiac disease is a common syndrome which is usually efficiently treated with a gluten-free diet as well as an optimal prognosis. Some major symptoms of celiac disease include malabsorption syndrome which could manifest in the form of chronic diarrhea, weight loss, and abdominal distention. COVID-19 have been observed to impact and worsen several disorders and lifestyle habits but have been found to not affect patients with autoimmune diseases such as celiac disease. This article would serve as a foundation for further research on the impact of COVID-19 on celiac disease.

**Keywords:** COVID-19, celiac disease, inflammatory cytokines

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## 1. COVID-19 and Celiac Disease

The coronavirus disease 19 (COVID-19) which originated in China, quickly circulated the world [1] and has been observed to infect people of all age groups [2]. Majority of patients with COVID-19 tend to experience mild to moderate respiratory illness as opposed to older patients, and patients with underlying disease conditions, which tend to suffer severe respiratory symptoms [3]. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which is the causal agent of COVID-19 has been observed to cause mild symptoms ranging from cough, fever, and fatigue to more severe symptoms such as pneumonia, acute respiratory distress syndrome (ARDS) and multi-organ dysfunction [4]. While COVID-19 has been observed to worsen several pre-existing disorders as well as lifestyle [5] and eating habits [6,7], research has shown that immunological disorders such as celiac disease is not worsened in patients with COVID-19 [8,9] Celiac disease, which is a severe autoimmune disorder is characterized by the inability to consume gluten due to its effect on the small intestine. Consumption of a gluten-free diet combined with accurate optimum prognosis is essential for effectively treating this disorder [10,11]. The progression of COVID-19 in patients has been associated with an increase in inflammatory cytokines and found to trigger a cytokine storm in the body [12,13,14]. This is quite like a celiac disease which is also characterized by an increased expression of inflammatory cytokines such as IL15, IL21, IFN $\gamma$ , and IL17a [15,16,17]. Regardless of the upregulation of inflammatory cytokines in patients with

severe COVID-19 and celiac disease, there has been no evidence to show that celiac disease is being worsened or impacted by COVID-19. Since there is no link between celiac disease and SARS-CoV-2, patients with celiac disease do not need to be vaccinated against COVID-19 unless they belong to the aging population and/or have other underlying diseases that makes them vulnerable to SARS-CoV-2 infection.

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## Conflicts of Interest

The authors have no conflicts of interest.

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